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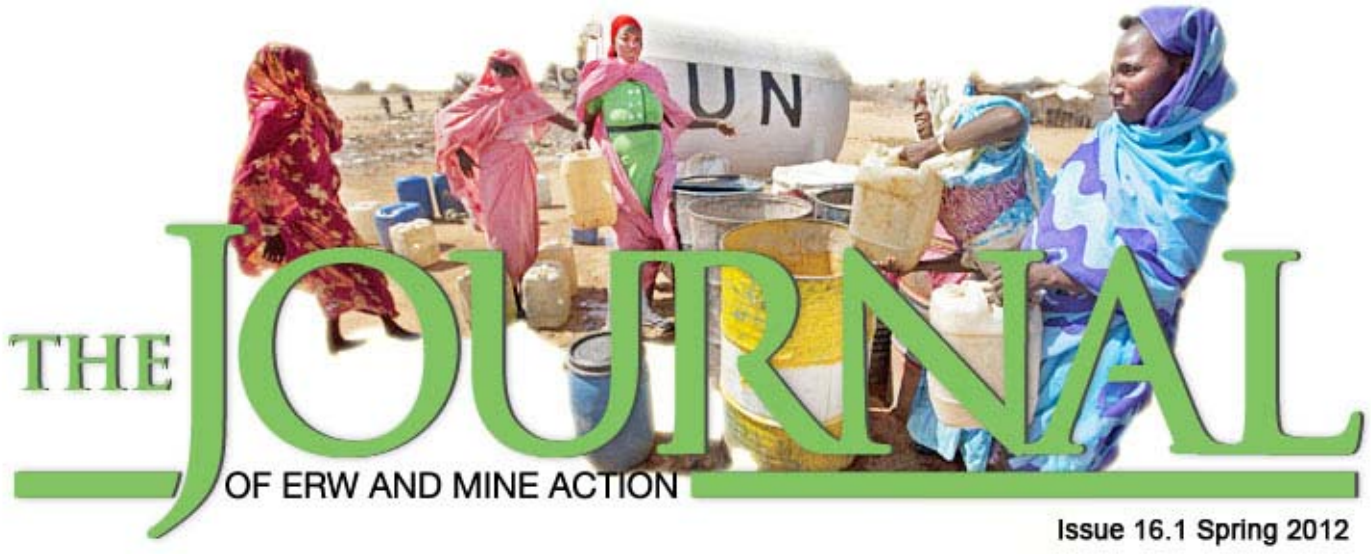

Food Security Emerges as a Complex Global Challenge

by Bryan McDonald, Ph.D. [Pennsylvania State University]

Measures are being taken toward land restoration and explosive remnants of war clearance to aid in worldwide food security. Global demining and ordnance removal efforts are contributing to health improvements and land availability for sustainable crop growth. This article discusses the problem of food security in the twenty-first century and briefly reviews three sets of concerns that are converging to amplify, disrupt and transform efforts to ensure that all people have the food they need to lead active and healthy lives.[1]

Denial of use or access to an area is a primary use of landmines in conflicts. Far too often, landmines and explosive remnants of war prevent access to land long after conflicts end. As a result, ERW can pose significant problems for post-conflict efforts to promote stability and economic reconstruction. In addition to causing injury or death, ERW can have a number of impacts on food production. These include preventing use of land, requiring clearance of agricultural and forested lands, contributing to deforestation due to clearance of new land intended to replace agricultural areas affected by ERW, impeding access to rivers and other fishing grounds, killing livestock, and contributing to pollution of soils and waters with toxic contaminants.

ERW clearance and land restoration can make considerable contributions to reconstruction efforts through activities such as the resumption of food production. For example, an examination of the effects of landmines in Afghanistan, Bosnia and Herzegovina, Cambodia and Mozambique found that agricultural and livestock production could be significantly improved through mine-clearance efforts.[2] While clearance is an important part of promoting stability and post-conflict reconstruction, it is only one aspect of a larger set of food issues that impact the health, well-being and security of the global community.

Food Security in the Twenty-first Century

While there are many definitions of food security, the most commonly used definition states that food security "exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life."[3] Thus, while availability is a necessary component of food security, access is also critical to preventing food insecurity.

Events of the early twenty-first century demonstrate that food security remains an urgent problem. Rising food prices have contributed to unrest and violence in more than 60 countries and have increased the number of malnourished people to levels not seen in decades. Furthermore, national and international food safety incidents, such as recent *E.Coli* outbreaks in the United States, have raised awareness that, despite advances in food safety and public health, food systems can still transmit health threats among human populations. Whereas agricultural and food production activities have been recognized as key components of environmental and climatological changes, studies have revealed that food production worldwide could face significant challenges as a result of these changes in coming

decades. Reflecting these events and trends, world food problems emerged as key economic, political and social issues during the second half of the twentieth century.

Globalization and global environmental change have transformed the ways people get food and have given rise to a complex, transnational network of food systems that includes a range of activities and processes related to food. The global food network consists of a variety of activities that link farms to tables including the production, processing, transportation and preparation of food. This complex network is filled with pockets of abundance, and scarcity and its shape does not fit into traditional models of the world such as North/South or Developed/Developing. In the twenty-first century, food insecurity is being driven by a complex mix of forces: population growth, increased purchasing power, changing dietary preferences, severe weather events and the integration of food systems into global financial systems. In addition to the pressing need to address world hunger, food security in the twenty-first century consists of complex problems that involve addressing malnutrition, optimizing food safety and managing global environmental change. The elimination of ERW and landmines from an affected area allows the land to replenish and become a viable option for farming and sustainable local food sources.

Core Challenges: Nutrition, Safety and Sustainability

Rising global food prices, changing diets, natural disasters, severe weather events and global economic issues have reinforced the age-old dilemma of ensuring worldwide access to food, which would allow everyone in the world to lead active and healthy lives. While improvements in food production and global health allowed human societies to flourish in the twentieth century by dramatically increasing the global population size and life expectancy and reducing infant and child mortality rates, malnutrition remains a widespread result of food insecurity that impacts billions of people on a daily basis.

Malnutrition. Malnutrition is more than the challenge of chronic undernutrition. The term *malnutrition* collectively applies to multiple forms of poor nutrition including chronic hunger or when people do not receive sufficient energy from their diets. However, malnutrition also refers to people who do not receive an adequate supply of vitamins, minerals or nutrients from their diets and suffer from micronutrient deficiencies. In addition, malnutrition can refer to people who have excessive net energy intake and, depending on the severity of the condition, are obese or overweight. Collectively, these three problems are often referred to as the triple burden of malnutrition.[4]

Food Safety. Optimizing food safety introduces another set of challenges to food security. Designed to move perishable goods rapidly from producers to consumers, the global food network connects many different peoples and places. By linking local, national and global food systems together, the network provides tremendous food benefits: availability, variety and pricing.

A Somali woman and a malnourished child exit the medical tent after the child receives emergency treatment from the African Union Mission in Somalia. Somalia is the country most affected by the severe drought that has ravaged large swaths of the Horn of Africa, leaving an estimated 11 million people in need of humanitarian assistance in 2010. *Photo courtesy of United Nations/Stuart Price.*

However, not all of the effects have been positive. While largely providing safe and healthy food, the global food network can also transmit health threats to humans, animals and plants. Consequently, food supply contaminations by infectious diseases or chemical hazards can have significant health impacts. Although chemical warfare is currently prohibited under Geneva Protocol, residual effects of chemicals used in past wars have polluted food supplies. Millions of people become ill or die from contaminated food or water every year. Illness and contaminated crops, livestock and food supplies can also have a significant impact on the cost and availability of food, as well as on the health of agricultural and food production systems. While food safety is a key component of food security, efforts to ensure food safety must be carefully designed to balance needs so as to avoid placing undue burdens on small farmers and producers through, for example, requiring costly certification programs to gain access to markets.[5]

The Environment and Food Production. A final set of challenges lies in managing global environmental change and improving the sustainability of food production. Throughout history, people have gathered, hunted, farmed, fished and raised livestock for food, and these activities have significantly influenced how human populations impact the environment. Agricultural and food production systems are linked together through feedback cycles that drive environmental changes. These cycles affect human societies and lead to further environmental changes.

Collectively, food production activities have a significant effect on environmental change, including climate change. These changes are often localized and involve cutting down or burning forests to create croplands, which can increase erosion of topsoil and loss of soil nutrients and reduce quality of water when siltation occurs and agricultural runoff enters waterways. However, local changes can aggregate to have larger impacts that contribute to problems such as


A girl carrying a smaller child in a sling pouch on her back drinks water during a distribution in a camp for people displaced by the drought in Mogadishu, Somalia. In 2010 the United Nations declared famine in five Somali regions.
Photo courtesy of UNICEF/Kate Holt.

toxic dead zones in rivers and oceans, desertification and global climate change. In order to manage environmental change, authorities must maintain and improve productivity gains. However, food production also needs to comply with the imperatives of sustainable development so as to nurture resilient ecosystems.

Discussions of human impacts on the environment tend to focus on drivers such as agriculture, the utilization of natural resources through activities such as logging and mining, and the impacts of urbanization and the development of infrastructure such as roads and waterways. However, it is also vital to recognize that war is a significant driver of human impacts on the environment. Environmental degradation during warfare can often be rapid and widespread, and in the case of landmines and ERW, can continue long after conflicts have ended. In recent years, an increasing amount of attention has focused on the role that environmental and natural resources play in fueling, funding and prolonging conflicts, as well as considering their ability to contribute to peacebuilding.[6]

In addition to returning areas affected by ERW to agricultural use, clearance efforts can be part of broader programs to improve environmental quality and improve agricultural production while also contributing to post-conflict reconstruction activities. For example, Roots of Peace, a U.S. based nongovernmental organization, has planted more than two million high value fruit trees as part of efforts to transition Afghan farmers from growing poppies for drugs into growing crops that can be sold in export markets. Such efforts demonstrate positive ways to link improving access to agricultural lands through landmine and other ERW clearance efforts with programs to improve the economic and social sustainability of communities through boosting livelihoods while improving environmental quality by planting sustainable agricultural crops.


People displaced by drought in Somalia arrive at the Dolo Ado camp in Ethiopia and queue to be registered by the aid agencies running the camp. 2010.
Photo courtesy of Cate Thurton/Department of International Development.

Conclusion

This brief review of the challenges faced by food security emphasizes the many ways in which global food networks give rise to new vulnerabilities and new threats that can negatively affect the security and wellbeing of people around the world. Authorities must constantly seek solutions to multiple goals in order to use resources effectively. Efforts to promote demining and ordnance removal are especially vital in light of converging food-security challenges. Preventing injury and death, clearance efforts also improve human health and security by leading to the development of sustainable food production systems, and contributing to climate-change mitigation and adaptation efforts through sustainable land-management practices.

In a time of scarce resources and multiple policy priorities, efforts to address problems from landmines and other ERW can benefit from connections to efforts that address food security challenges. For example, the U.S. Agency for International Development's Commercial Horticulture and Agricultural Marketing Program has funded efforts to support farmers in Afghanistan by improving agricultural production and shifting toward crops, such as grapes, pomegranates and almonds, that can be sold in export markets. Projects like these, address multiple goals, such as improving stability and allowing sustainable economic growth that can support food security. As this example demonstrates, effective partnerships between governments and nongovernmental and international organizations will be necessary to navigate a challenging food security landscape and improve food security in the twenty-first century.

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Biography

Bryan McDonald teaches environmental history and politics at Pennsylvania State University. He is the author of *Food Security* and co-editor of *Global Environmental Change and Human Security* (MIT Press, 2009) and *Landmines and Human Security: International Politics and War's Hidden Legacy* (SUNY Press, 2004).

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Endnotes

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